

Executive Summary

Feb 2014

Since 2010, the Telemedicine & Advanced Technology Research Center (TATRC) at the US Army Medical Research & Materiel Command (USAMRMC) has been conducting applied joint research and development for improving DOD engagement in international disaster response (DR) and humanitarian relief (HA) operations, medical training and readiness missions and partner capacity-building. The research is examining ***small footprint, low cost and innovative open source mobile technology solutions*** (off the .mil) that can be used by DOD and shared with our global partners to enhance performance and improve interoperability.

Presently, there is a lack of standardized approaches and technologies for supporting HADR and other theater engagement activities. COCOMS/Services are therefore left to parochial and/or regional methods for carrying out these activities.

In the case of HADR, tools are incredibly limited and a fair amount of information sharing and documentation is done using crude information systems or paper forms, which is the case for the documentation of host nation medical care and treatment, for example, as part of Medical Readiness & Training Exercises (MEDRETEs) or disaster response. This is in stark contrast to the sophisticated electronic medical record systems used in theater to document soldier care. These limitations affect continuity and coordination of care, interoperability with others participating in the response, as well as the reporting of metrics.

Other engagements with host nations involve training, which ranges from small subject matter exchanges to large-scale exercises which can cost millions of dollars. Either approach involves a finite amount of people and could yield limited results, or even been canceled on short notice should conditions change.

Given the ubiquitous nature of mobile technologies around the world, incorporating the use of personal mobile phones combined with relevant content into HADR and engagement strategies has the potential for creating structure and uniformity across operations, and dramatically increasing the distribution of information and resources, to more people, for less money, in a more effective and reliable fashion. Also, use of open web standards and creation of open source software allows sharing with partners and the ability to positively influence and advance use of mobile on a large scale.

Three prototype capabilities have been identified as a potential “engagement toolkit” aimed at improving how we train and educate, communicate and document and measure activities: factors critical to readiness and mission performance in overseas operations.

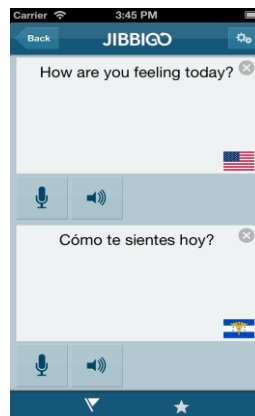
The overarching program is called GlobalMedAid (GMA) and the **GMA toolkit** consists of:

- **Mobile Learning** - Supports personal preparation, job performance and the sharing of UNCLASS content using a personal smartphone or tablet. The system provides mobile apps via public app stores and a robust backend infrastructure from which to organize and distribute informational resources and push mission-relevant content.
- **Mobile Language Aids** – Delivers tailored foreign-language learning and speech to speech to speech to text machine translation via a smartphone App to establish communications with victims and other foreign-speaking partners when translators are unavailable or untrained.
- **Mobile Data Capture customized by mission type**- Tools to electronically document a wide range of engagement activities, so results may be aggregated, reviewed, reported and measured while being linked to training and readiness objectives.



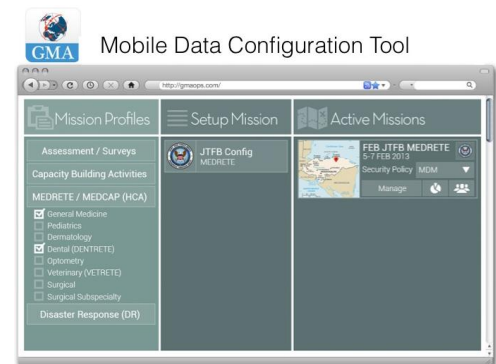
**Mobile Learning- productivity tools,
training and learning on the job**

Lead: AFRICOM



**Field Language Aids and Machine
Translation**

Lead: SOUTHCOM/PACOM



Disaster & Other Mobile Data Capture

Lead: SOUTHCOM

While the functionality of the tool-kit can be broadly applied and utilized, using public health/medical domain to mature capabilities and create an organizational framework for a larger program offers several advantages as a starting point for use of these mobile capabilities: 1) Health is a neutral subject and is easily discussed and shared with Interagency, NGO and foreign partners, 2) Health content is open source and covers a broad range of topics - from direct medical care and procedures, to public health and preventive medicine (malaria prevention, water sanitation and disease surveillance, etc.) and, 3) A majority of the GMA mobile software has been developed as free and open-source, which enables sharing with both domestic and international partners. This can facilitate adoption of common tools that could improve the collective response and save lives.

To date, the MHS has invested approximately \$5M of Joint Program Committee (JCP1) 6.4 DHP RDT&E funding across the three different projects to support independent development of these tools. A central program has emerged to unify these various projects into the focused campaign/capability called GlobalMedAid (GMA).

A brief summary of each project is provided below:

- GMA- Learn:** A mobile learning prototype infrastructure was initially developed and demonstrated as part of a Coalition Warfare Project (CWP) with 20 countries in 2012. Post CWP, TATRC has continued to mature this cross platform, open source, mobile learning environment system. In addition to technical development, TATRC is also working with the end-user community to facilitate the maturation of CONOPS/TTPs and the curation of mobile medical content for use in demonstrating and evaluating the capability. The current m-learning campaign focuses on Force Health Protection (Malaria Training and Prevention) with AFRICOM. Apps are being produced to showcase the flexibility of the back-end architecture and prove the distribution capability of content, globally. The GlobalMedAid App is in public App stores and the Bite Back App will be released in March 2014. In addition, in partnership with University of Miami, TATRC is conducting a survey of mobile device ownership and usage within DOD—the first study of its kind, to understand the fit for mobile as a capability to extend the training continuum and better understand preferences of the work force for receiving job aids and informational resources.

- **GMA- Translate (Mobile Language Aid)-** A COTS product (Jibbiggo App-English-Spanish translation) was customized for the medical domain (speech to speech and speech to text) and implemented for a limited operational field test at a 3-day Joint Task Force Bravo MEDRETE in Feb 2013. Residual kits were deployed to SOUTHCOM in Sept 2013 and 1,000 iOS licenses are available to share further across the force.
- **GMA- Mobile Data Capture-** A collection of open source tools optimized for smartphones/tablets are being developed to enable a unit to customize configure a mobile data capture solution for a variety of engagement activities. Using a web interface, a medical planner or other personnel, can use a “mission builder” wizard to design a custom mobile data capture solution by mission type. The architecture is scalable and can support a 1-2 person team for basic data capture up to a larger scale event like a MEDRETE (30-50 people) or disaster response. The platform can operate disconnected, via a local area network server using a Wi-Fi connection or using the Cloud. Given use of open standards, data can also be shared with Host Nation systems should they be available. The project is also working on NEXGEN mobile data form filling (mForms) technologies and the incorporation of SNOWMED to ensure interoperability. Lastly, by integrating mLearning with mission documentation tools, we can track training objectives, measure readiness at the individual and aggregate levels, prescribe training modules based on skill deficits and mission requirements, and recognize and incentivize performance by awarding badges. A prototype will be demonstrated in Feb 2014 as part of a MEDRETE performed by Joint Task Force Bravo in Honduras. There is an MOU with HHS ASPR/OPEO to collaborate on this capability.

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